

## ABSTRACT

A method is provided for tracking an object, including positioning a radio frequency (RF) driver to radiate an RF driving field toward the object, and fixing to the object a wireless transponder that includes a power coil and at least one sensor coil. The method also includes receiving the RF driving field using the power coil and storing electrical energy derived therefrom. A plurality of field generators are driven to generate electromagnetic fields at respective frequencies in a vicinity of the object that induce a voltage drop across the at least one sensor coil. A digital output signal is generated at the wireless transponder indicative of the voltage drop across the sensor coil, and the generation of the digital output signal is powered using the stored electrical energy. The digital output signal is transmitted from the wireless transponder using the power coil, and the transmission of the digital output signal is powered using the stored electrical energy. The digital output signal is received and processed to determine coordinates of the object.